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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,980	03/07/2005	Yasuhiro Hase	040116	7990

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VIENNA, VA 22182-3817

EXAMINER

THOMAS, BRADLEY H

ART UNIT	PAPER NUMBER
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2835

MAIL DATE	DELIVERY MODE
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10/16/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/526,980

Applicant(s)

HASE ET AL.

Examiner

Bradley H. Thomas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-7,9,11,14-16 and 18-20 is/are rejected.
- 7) ☒ Claim(s) 3,8,10,12,13 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Acknowledgement is made of the Amendment filed July 26, 2007.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 4-7, 9, 11, 14-16 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hase (JP 06-181028, with machine translation and Abstract) taken in combination with Koch (US 3,813,627).

Regarding Claim 1, Hase discloses a cord type thermal fuse comprising:

- a fuse core (3) produced by winding a conductor (2) meltable at a predetermined temperature around an insulating core member (1) continuously provided elongating in the length direction of the insulating core member (1) (see Fig. 1);
- and an insulating cover (5) covering the outside of said insulating core member (1), wherein:
- said conductor (2) *can be* broken by expanding said insulating core member (1) at a predetermined temperature;

except for:

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- said insulating core member comprises a gas-containing material.

Koch teaches that it is known to have an insulating core member (16) that is a gas-containing material (see col. 4, lines 60-67). It would have been obvious to one having ordinary skill in the fuse art at the time the invention was made to have used a gas-containing material as an insulating core of a fuse as taught by Koch, since Koch states at col. 4, lines 62-67 that such a modification would have allowed for gas to be evolved, thereby providing certain breaking of the fuse elements and providing further electrical protection.

Regarding Claim 2, Hase teaches:

- said insulating core member (1) has at least one or more protrusions (see Figs. 2-3) formed continuously or intermittently in the length direction of said insulating core member on the outer peripheral surface of said insulating core member (1).

Regarding Claim 4, Hase teaches:

- a line-shaped or braid-shaped (4) insulator is provided on an inner peripheral side of said insulating cover (5); and
- said conductor (2) is sandwiched between said insulating core member (1) and said line-shaped or braid-shaped insulator (4) at least partially in the length direction of said conductor (2) (see Fig. 1).

Regarding Claims 5 and 6, Hase teaches:

- said line-shaped or braid-shaped insulator (4)

except for explicitly stating that the insulator has:

- a characteristic of contracting in the length direction of said conductor around a melting temperature of said conductor;
- characteristic of expanding in a radial direction around a melting temperature of said conductor.

However, Hase does teach that the insulator (4) is an inorganic or organic fiber (e.g. polyamide, etc.) (see [0009] of translated DETAILED DESCRIPTION). It would have been obvious to utilize the material characteristics of the fiber materials based (e.g. expansion and contraction properties), since it was well known in the art at the time the invention was made that such fiber materials have inherent material characteristics (i.e. response to temperature) that allow for contracting/expansion in response to various temperatures. Thus, the insulator would have reacted accordingly to the predetermined melting temperature of the various fuse elements, and aided in the severing of the fuse.

Regarding Claims 7, 11 and 14-15, Hase discloses the claimed invention except for:

- said insulating core member comprises a gas-containing material as a structural element.

Koch teaches that it is known to have an insulating core member (16) that comprises a gas-containing material as a structural element (i.e. a filler) (see col. 4, lines 60-67). It would have been obvious to one having ordinary skill in the fuse art at the time the

invention was made to have used a gas-containing material as an insulating core of a fuse as taught by Koch, since Koch states at col. 4, lines 62-67 that such a modification would have allowed for gas to be evolved, thereby providing certain breaking of the fuse elements and providing further electrical protection.

Regarding Claims 9, 16 and 18-20, Hase teaches:

- the cord type thermal fuse (see Fig. 1) provided on a fiat surface in a serpentine manner (see Fig. 4);
- and means (8) for fixing a layout of said cord type thermal fuse.

Allowable Subject Matter

4. Claims 3, 8, 10, 12-13 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding Claims 3 and 10, the cited prior art does not teach or suggest the insulating cover having at least one or more protrusions formed continuously or intermittently in the length direction of said insulating cover on the inner peripheral surface/ inner periphery side of said insulating cover. Claims 12 and 17 are potentially allowable due to their dependency upon Claim 3.

Regarding Claim 8, the cited prior art does not teach or suggest the insulating core member comprises a gas-containing material covering a periphery of a tensile resistant member at the center of said insulating core member. Hase teaches a tensile resistant member in the center of the insulating core member, but the gas-containing core member of Koch teaches only a singular core member.

Regarding Claim 13, the cited prior art does not teach or suggest the insulating core member comprises a gas-containing material in airtight spaces.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following references teach general cable/wire structures:

- Lyndon (US 1,779,610)
- Winstanley (US 2,217,284)
- Shanklin (US 2,253,984)
- Spooner et al. (US 2,581,212)
- Masanao (US 3,683,309)
- Warbutton et al. (US 3,828,119)

The following references teach link/wire type fuses:

- Leach (US 4,319,212)
- Dornauer (US 4,736,181)
- Bozell et al. (US 5,304,740)

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bradley H. Thomas whose telephone number is 571-272-9089. The examiner can normally be reached on 7:00am - 3:30pm (Eastern).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayprakash N. Gandhi can be reached on 571-272-3740. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Bradley H. Thomas
Examiner
Art Unit 2835

BHT

 ANATOLY VORTMAN
PRIMARY EXAMINER